Sent via Electronic and Certified Mail, Return Receipt Requested

November 13, 2008

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Re: Sixty-day notice of intent to sue for violations of the Clean Water Act and Administrative Procedure Act

On behalf of myself and the Center for Biological Diversity ("Center"), this letter is provided to the Administrator of the United States Environmental Protection Agency ("EPA") and Region 9 Administrator as a notice of intent to sue for violations of the Clean Water Act. 33 U.S.C. §§ 1314(a). These violations arise from EPA's failure to review and revise water quality criteria accurately reflecting the latest scientific knowledge and to publish information as required by the Clean Water Act section 304. 33 U.S.C. § 1314(a)(1) & (2). This notice is pursuant to the section 505(a)(2) of the Clean Water Act to notify you that unless EPA corrects these violations within the next 60 days, the Center will seek redress in federal court. 33 U.S.C. § 1365(a)(2); 40 C.F.R. § 135.

EPA has also violated the Administrative Procedure Act by failing to answer the Center's formal petition requesting that EPA revise water quality criteria and publish information to address ocean acidification. This constitutes action unreasonably delayed in violation of the Administrative Procedure Act. 5 U.S.C. § 706(1). Moreover, since EPA had a duty under the Clean Water Act section 304 to take requested actions, EPA has unlawfully withheld agency action. 5 U.S.C. § 706(2). Additionally, EPA has acted arbitrarily and capriciously by failing to revise water quality criteria reflecting the latest scientific knowledge about ocean acidification. 5 U.S.C. § 706(2).

I. IDENTIFICATION OF THE PARTIES

I submit this notice letter on my own behalf and as a representative of the Center for Biological Diversity. The Center is a nonprofit environmental organization dedicated to protecting endangered species and wild places through rigorous science, advocacy, and environmental law. The Center's Oceans Program aims to protect marine species and ocean ecosystems. The Center is concerned with the adverse impacts on marine communities resulting from carbon dioxide pollution. I am an attorney working in the Center's Oceans Program. My area of focus is the protection of marine habitat and species from the impacts of ocean acidification. I reside in the San Francisco Bay Area and frequently use the coast and ocean of northern California for recreation and enjoyment of marine waters and marine life. Many of the Center's 200,000 members, online activists, and staff reside near and frequently visit the oceans impacted by ocean acidification. Like me, those members visit the coast to observe, research, recreate, and otherwise use and enjoy the ocean and marine wildlife. EPA's failure to comply with environmental laws to protect coastal and ocean waters is harming my interests, and those of the Center and its members.

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II. CLEAN WATER ACT BACKGROUND

Congress enacted the Clean Water Act, 33 U.S.C. §§ 1251 et seq., with the express purpose of "restor[ing] and maintain[ing] the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. § 1251(a) (2006). Congress intended to protect "water quality which provides for the protection and propagation of fish, shellfish, and wildlife" and provides for the continuing beneficial use of our waters for recreation. *Id.* § 1251(a)(2).

Toward those goals, the Clean Water Act requires the EPA to establish national water quality criteria, 33 U.S.C. § 1313(a)(1), and to publish information that will guide states in their adoption and periodic review of water quality standards, 33 U.S.C. § 1313(a)(2). Water quality criteria and information, and revisions thereof, are required to be issued to the states and published in the Federal Register and otherwise be made available to the public. 33 U.S.C. § 1313(a)(3).

Under section 304(a)(1), Congress mandated that the EPA "shall" develop and publish and "from time to time thereafter revise" water quality criteria "accurately reflecting the latest scientific knowledge:"

(A) on the kind and extent of all identifiable effects on health and welfare including, but not limited to, plankton, fish, shellfish, wildlife, plant life, shorelines, beaches, esthetics, and recreation which may be expected from the presence of pollutants in any body of water, including ground water;
(B) on the concentration and dispersal of pollutants, or their byproducts, through biological, physical, and chemical processes; and
(C) on the effects of pollutants on biological community diversity, productivity, and stability, including information on the factors affecting rates of eutrophication and rates of organic and inorganic sedimentation for varying types of receiving waters.

Section 304(a)(2) requires that EPA "shall" develop and publish "and from time to time thereafter revise" information on four topics necessary to protection of water quality:

(A) on the factors necessary to restore and maintain the chemical, physical, and biological integrity of all navigable waters, ground waters, waters of the contiguous zone, and oceans;
(B) on the factors necessary for the protection and propagation of shellfish, fish, and wildlife for classes and categories of receiving waters to allow recreational activities in and on the water;
(C) on the measurement and classification of water quality; and
(D) for the purpose of section 1313 of this title, on the identification of pollutants suitable for maximum daily load measurement correlated with the achievement of water quality objectives.

"[W]hen a statute uses the word 'shall,' Congress has imposed a mandatory duty upon the subject of the command." *Forest Guardians v. Babbitt*, 174 F.3d 1178, 1187 (10th Cir. 1998). The duty to review and consider required factors, such as the latest scientific knowledge, is a non-discretionary duty.

III. OCEAN ACIDIFICATION BACKGROUND

Ocean acidification is already impacting water quality in the United States and California. A recent survey off the Pacific Coast found that the magnitude of pH change was the greatest in waters off the northern California coast (Feely et al. 2008). As a result, marine organisms in the surface waters, water column, and sea floor along the California coast are being exposed to corrosive waters.

Carbon dioxide absorbed by the oceans is causing seawater to become more acidic. This process, known as ocean acidification, will have serious consequences for marine life. These human-induced changes are altering seawater chemistry at an unprecedented rate with potentially devastating impacts on the ocean ecosystem.

The oceans have absorbed approximately 30 percent of the carbon dioxide emitted into the atmosphere by human activities (Feely et al. 2004, Sabine et al. 2007). About three-fourths of manmade carbon dioxide emissions come from fossil fuel burning, and most of the remaining emissions are due to land-use changes, primarily deforestation (Denman et al. 2007). The atmospheric carbon dioxide concentration is 383 ppm, and rising at over 2 ppm per year (Guinotte & Fabry 2008; Denman et al. 2007).

Ocean acidification has caused seawater pH to decrease by 0.1 units on average, which is equivalent to a 30 percent change in acidity (Caldeira & Wickett 2003; Orr et al. 2005; Caldeira et al. 2007; Feely et al. 2008).[1] By the end of this century, the pH of the ocean is predicted to drop by another 0.3 or 0.4 units, amounting to a 100–150 percent change in acidity (Orr et al. 2005, Meehl et al. 2007). A pH change of this magnitude has not occurred for more than 20 million years (Feely et al. 2004).

One of the major impacts of ocean acidification is that it impairs the ability of marine organisms to build protective shells and skeletons. The uptake of carbon dioxide by the ocean impairs calcification in animals because carbonate minerals, calcite and aragonite, become unavailable in seawater. A recent survey of the Pacific Coast revealed that the effects of ocean acidification are occurring more rapidly than predicted (Feely et al. 2008).Researchers found seawater undersaturated with respect to aragonite upwelling onto large portions of the continental shelf, reaching shallow depths of 40 to 120 meters (Feely et al. 2008). As a result, marine organisms in surface waters, in the water column, and on the sea floor along the west coast are being exposed to corrosive water during the upwelling season.

Ocean acidification may adversely affect many marine organisms from plankton to corals. A brief review of the rapidly emerging science on ocean acidification suggests perilous biological consequences. For example, ocean acidification threatens the future of corals. Calcification rates of reef-building corals are expected to decrease 30-40 percent with a doubling of atmospheric carbon dioxide (Kleypas et al. 2006; Hoegh-Guldberg et al. 2007; Guinotte and Fabry 2008). Scientists predict that ocean acidification coupled with increasing ocean temperatures will destroy the world's reefs by mid-century (Hoegh-Guldberg et al. 2007). Cold-water corals may be even more sensitive to reduced carbonate saturation because they already live in conditions less favorable to calcification, and 70 percent of scleractinian cold-water corals could be in water undersaturated with respect to aragonite by the end of the century (Royal Society 2005; Guinotte & Fabry 2008).

Plankton, which form the basis of the marine food web, are among the calcifying organisms likely to be adversely affected by ocean acidification. Studies of coccolithophorids showed that carbon dioxide related changes to seawater caused reduced calcification, resulting in malformed and incomplete shells (Riebesell 2000). Experiments also show that the shells of pteropods dissolve as seawater becomes undersaturated with aragonite (Orr et al. 2005). Elevated carbon dioxide concentrations

[1] Acidity is the concentration of H^+ ions, and it is measured in pH units. A pH decrease of 1 unit means a 10-fold increase in the concentration of H+, or acidity.

also reduce the shell mass of foraminifera (Kleypas et al. 2006). While some species of plankton react differently under high concentrations of carbon dioxide, most calcareous plankton studied thus far exhibit reduced calcification (Guinette & Fabry 2008).

Scientists predict that ocean acidification will also decrease calcification in shellfish significantly by the end of the century (Gazeau et al. 2007). For example, a recent study found that the calcification rates of the edible mussel and Pacific oyster decrease with increases in carbon dioxide (Gazeau et al. 2007). Experiments revealed that moderate increases in atmospheric carbon dioxide had significant effects on the survival and growth of sea urchins and snails (Shirayama 2005).

Ocean acidification also disrupts metabolism and other biological functions in marine life. Changes in the ocean's carbon dioxide concentration result in accumulation of carbon dioxide in the tissues and fluids of fish and other marine animals, called hypercapnia, and increased acidity in the body fluids, called acidosis. These impacts can cause a variety of problems for marine animals including difficulty with acid-base regulation, calcification, growth, respiration, energy turnover, and mode of metabolism (Pörtner et al.2004). Squid, for example, show a very high sensitivity to pH because of their energy intensive manner of swimming (Pörtner et al. 2004; Royal Society 2005). Because of their energy demand, even under a moderate 0.15 pH change, squid have reduced capacity to carry oxygen and higher carbon dioxide pressures are likely to be lethal (Pörtner et al. 2004). In fish, high concentrations of carbon dioxide in seawater can lead to cardiac failure (Ishimatsu et al. 2004). Some studies show that juvenile marine organisms are particularly susceptible to ocean acidification (Ishimatsu et al. 2004; Kurihara & Shirayama 2004).

The consequences of ocean acidification on marine life are complex, but they could disrupt the marine food web with potentially detrimental consequences. Additionally, ocean acidification coupled with other environmental changes such as global warming can have cumulative and synergistic adverse impacts on ocean biodiversity (Guinotte & Fabry 2008). Carbon dioxide emissions must be reduced to avoid these consequences.

IV. EPA'S VIOLATIONS OF THE CLEAN WATER ACT AND THE ADMINISTRATIVE PROCEDURE ACT

On December 18, 2007, the Center submitted a formal petition to the EPA requesting that it initiate a rulemaking pursuant to the Clean Water Act, 33 U.S.C. § 1314(a), to address threats posed by ocean acidification. This Petition for rulemaking specifically requested that the EPA:

(1) Revise national water quality criteria for pH to reflect the latest scientific knowledge about ocean acidification, and pursuant to section 304(a)(1) should adopt a criterion stating:

- **For marine waters, pH should not deviate measurably from naturally occurring pH levels as a result of absorption of anthropogenic carbon dioxide pollution.**

(2) Publish information pursuant to section 304(a)(2) to provide guidance on ocean acidification, including:

- **the factors necessary to prevent deleterious pH changes in seawater chemistry due to anthropogenic carbon dioxide emissions;**
- **the factors necessary to prevent adverse impacts of ocean acidification on fish, shellfish, and wildlife; and**
- **the recommended methods for measuring pH and monitoring change over time.**

At this time, EPA has not answered the petition that it received on December 26, 2007.

Pursuant to section 304's mandate, EPA issued the "Blue Book" of Water Quality Criteria in 1973. In 1976, EPA published the "Red Book" which contained the water quality criteria for pH that is still used today. It stated:

> For open ocean waters where the depth is substantially greater than the euphotic zone, the pH should not be changed more than 0.2 units outside the naturally occurring variation or in any case outside the range of 6.5 to 8.5.

Quality Criteria for Water 1976: 342-43. In 1986, the "Gold Book" summarized water quality criteria in effect with no change to the pH criteria for oceans. Quality Criteria for Water 1986. Since then, although EPA has periodically updated some water quality criteria under section 304(a)(1) to accurately reflect the latest scientific information, the pH criterion above remains in effect today.

EPA's water quality criterion is woefully outdated and fails to reflect the latest scientific knowledge, summarized above and detailed in the aforementioned petition. Zeebe et al. (2008) specifically noted the inadequacy of existing regulatory mechanisms under the Clean Water Act to regulate ocean acidification:

> Thus, although the response of different organisms is expected to be inhomogeneous (*9*), current evidence suggests that large and rapid changes in ocean pH will have adverse effects on a number of marine organisms. Yet, environmental standards for tolerable pH changes have not been updated in decades. For example, the seawater quality criteria of the U.S. Environmental Protection Agency date back to 1976 and state that for marine aquatic life, pH should not be changed by more than 0.2 units outside of the normally occurring range (*10*). These standards must be reevaluated based on the latest research on pH effects on marine organisms. Once new ranges of tolerable pH are adopted, CO_2 emission

> targets must be established to meet those requirements in terms of future seawater chemistry changes (Zeebe et al. 2008: 52).

EPA has failed to perform a nondiscretionary duty of the Clean Water Act section 304(a), which requires that it shall review and revise water quality criteria to reflect the latest scientific knowledge and publish information. 33 U.S.C. § 1314(a)(1) & (2). Pursuant to the citizen suit provision of the Clean Water Act, 33 U.S.C. §§ 1365(a)-(b), we intend to sue the EPA for the violations of the Clean Water Act described herein. Moreover, EPA's failure to perform its duties constitutes agency action unlawfully withheld in violation of the Administrative Procedure Act. 5 U.S.C. § 706(1).

EPA's failure to answer the Center's petition also constitutes agency action "unreasonably delayed" in violation of the Administrative Procedure Act. 5 U.S.C. § 706(1). Finally, to the extent that EPA has reviewed its water quality criteria, any decision not to revise the pH water quality criterion is arbitrary and capricious in violation of the Administrative Procedure Act. 5 U.S.C. § 706(2).

V. NAME AND ADDRESS OF NOTICING PARTIES AND COUNSEL

I, Miyoko Sakashita, am a California resident, and I work for the Center for Biological Diversity's Oceans Program. The Center for Biological Diversity's Oceans Program is located in San Francisco, California. The Center is incorporated in New Mexico and has several offices throughout the United States. The Center for Biological Diversity and I are represented by the Center's legal counsel in this matter. Please direct correspondence regarding this notice letter to:

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VI. CONCLUSION

This notice letter is provided so EPA may correct the violations described above. If EPA does not take corrective actions within 60 days, the Center intends to file suit on behalf of the organization and its members seeking injunctive relief, attorney's fees and litigation causes, and other appropriate relief. If you wish to discuss this matter further, please contact me at the address provided.

Sincerely,

Miyoko Sakashita

SOURCES
* Enclosed

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